case of the Gammelost the ripening and flavoring are accomplished by adding to the sour, coagulated skimmed milk two fungi, *viz.*, a Penicillium and a Mucor. The blue mold used is not *P. glaucum*, which always spoils the cheese when it gets into it, but a hitherto unrecognized species, *P. aromaticum*. In the green cheese, which is said to taste like sour horn, dead yeast and lactic acid organisms prevail; in the ripe cheese, which has an entirely different structure and appearance, Mucor and Penicillium are very abundant, Mucor being most abundant and exerting the predominant influence if the cheeses are ripened at high temperatures, and Penicillium if they are ripened at moderate temperatures.

We are not told what fungi should be used to ripen and flavor Gorgonzola, Roquefort, Camembert, and Norwegian cheese (goat cheese), but are given to understand that these problems have been solved, and also that he will soon be in condition to give exact directions for making Stilton, Gouda, Eidam, Cheddar, Emmetthaler, and other cheeses. The paper from which these statements have been taken is illustrated by six lithographic plates showing Gammelost and the fungi required to ripen and flavor it. ERWIN F. SMITH.

**A New Check-List of North American Plants.**[1] — At the Buffalo meeting of the American Association the botanists interested in the Rochester nomenclature decided to prepare a reform check-list of the higher plants of North America. This list, except in its greater territorial scope, was to be much like the one already issued for northeastern North America. The work, we believe, was to be assigned so far as possible to specialists, each of whom should treat only such groups as were most familiar to him. It is needless to say that many botanists have grave doubts as to the value of such a list. They see clearly that the Rochester nomenclature, instead of being an ideal system, has serious defects which will, as they believe, preclude its ultimate success. However, if such a list was to be prepared at all, there is reason to commend the coöperative plan adopted. The consistent application of any new principle of nomenclature to the flora of such a vast area is a matter of great and obvious difficulty, and it was the hope of the conservatives as well as the reformers that the work, if undertaken, might be carried out with caution and scholarly methods. For these reasons it is a matter for general regret that the proposed critical list has been anticipated

[1] Heller, A. A. *Catalogue of North American Plants North of Mexico, Exclusive of the Lower Cryptogams.* Minneapolis, March 10, 1898.

by a crude and hasty compilation. Mr. Heller has undoubtedly prepared and issued his list with sincere conviction that he was thereby advancing the cause of the Rochester nomenclature and meeting a need of American botanists. But in these days of critical work and high bibliographical ideals, when references are carefully verified and proofs repeatedly read, the appearance of a work containing so many glaring errors can scarcely commend any system.

A slight examination of the list shows such "first correct combinations" as *Silene cucubalus*, *Arenaria sajanensis*, and *Anoda lavateroides* on equal footing with Rochester names, some of which are their exact synonyms. Names indorsed by the *Illustrated Flora* appear on the same pages with others, such as Cheiranthus (for Erysimum), which are quite opposed to the usage of Messrs. Britton and Brown. All the Cerastiums are appended to Arenaria. Misprints abound. Some good species are omitted. Genera are subjected to extreme subdivision and many obvious varieties are ranked as species. In some cases the same species, such as *Montia sarmentosa* and *M. saxosa*, appear coördinately under different genera. *Trifolium gracilentum* and its variety are repeated under different numbers. No care has been taken to give consistent and uniform abbreviations of authorities. Thus on a single page of the Cactaceæ the eye meets "Engelm. & Bigel.," "E. & B." "Engel. & Bigel.," "Eng. & Big.," "Engelm. & Big.," and "Englm." Finally, a considerable number of pure synonyms are rehabilitated.

After wandering about in this nomenclatorial maze, the bewildered reader, in hope of finding some key to it, turns to Mr. Heller's preface, there to learn that during the last few years "a more stable system of nomenclature has been introduced." Is this irony? Surely, if the author knew of such a system, he might have divulged it for the good of his fellow-botanists, and not have jumbled up "Kew rule" names, on the one hand, with Brittonian and Greenean names, on the other, to say nothing of a liberal admixture of the merest synonyms.

No genus has been more discussed by the reformers than the one which they call Tissa. The group has been revised by one of their number and largely augmented by another. The generic name Tissa, which meets with little favor by the rest of the world, has in a way become the shibboleth of the Rochester reformers. Let us see how Mr. Heller treats this much-emphasized genus. He recognizes sixteen species and varieties. Of these *T. clevelandi* and *T. leucantha* have incorrect parenthetical authorities; *T. clevelandi*

Greene and *T. villosa* Britton are exact synonyms, founded upon the same plants of the Pacific slope; *T. macrotheca*, var. *scariosa*, and *T. pallida* are also perfect and confessed synonyms; the recent *T. gracilis* is identical with the much older *Spergularia plattensis* of South America; *T. salsuginea* Bunge is an impossible combination as the last of Bunge's many papers was published before the resurrection of Tissa, while *Spergularia salsuginea* (Bunge) Fenzl in its American use is an exact synonym of *T. diandra*. Thus, of Mr. Heller's sixteen species and varieties about half are either repeated under some obvious synonym or are adorned with incorrect authorities. These are not differences due to divergent botanical opinion. They are clearly errors of careless compilation, all of which could have been easily avoided by slight study of the recent monographs. Surely, this is not the best that our reformers can do with their pet genus after more than five years of unprecedented activity. B. L. R.

**A Review of Canadian Botany.**[1] — The second portion of Professor Penhallow's admirable historical sketch, now before us, traces botanical activity in Canada from 1800 to 1895. The first few pages describe the Canadian work of the younger Michaux, Pursh, F. A. Holmes, Titus Smith, Goldie, the Hookers, La Pylaie, Brunet, Provancier, the late George Lawson, Sir William Dawson, and some others. Attention is then directed to the botanical gardens, societies, and collections of Canada, to the results of the Natural History Survey under Professor Macoun, and to the facilities for botanical work in the leading educational institutions of the country. The larger and by far the most valuable part of the paper, however, is an excellent bibliography of Canadian botany during the period covered. This list contains nearly five hundred titles and shows exceptional care and attention to detail. B. L. R.

**Coastal and Plain Flora of Yucatan.**[2] — Dr. Millspaugh's third important paper upon the flora of Yucatan is an annotated list of plants collected by Dr. Arthur Schott in 1864–66, by Mr. Whitmer Stone in 1890, and by Dr. George F. Gaumer in 1895–96, together with some notes and new species by Professor Radlkofer and Dr. Loesener. This catalogue enumerates more than three hundred species and varieties not hitherto recorded in the flora of this poorly known territory. No one who has not had some experience in

[1] Penhallow, D. P. *Trans. Roy. Soc. Canad.*, ser. ii, vol. iii, sec. 4, pp. 3–56.
[2] Millspaugh, C. F. *Publ. Field. Columb. Mus.*, No. 25, issued January, 1898.